of a radioactive isotope, a member of a ligand-receptor pair, a member of an enzyme-substrate pair and a member of a fluorescence resonance energy transfer pair.

In one aspect, the invention provides compositions comprising an antibody of the invention and a carrier, which in some embodiments is pharmaceutically acceptable.

In another aspect, the invention provides compositions comprising an immunoconjugate as described herein and a carrier, which in some embodiments is pharmaceutically acceptable.

In another aspect, the invention provides articles of manufacture comprising a container and a composition contained therein, wherein the composition comprises an antibody of the invention. In another aspect, the invention provides articles of manufacture comprising a container and a composition contained therein, wherein the composition comprises an immunoconjugate as described herein. In some embodiments, these articles of manufacture further comprise instruction for using said composition.

In yet another aspect, the invention provides polynucleotides encoding an antibody of the invention. In still another aspect, the invention provides polynucleotides encoding an immunoconjugate as described herein.

In one aspect, the invention provides recombinant vectors for expressing an antibody of the invention. In another aspect, the invention provides recombinant vectors for expressing an immunoconjugate of the invention.

In one aspect, the invention provides host cells comprising a polynucleotide or recombinant vector of the invention. Preferably, a host cell is a prokaryotic cell. In some embodiments, a host cell is a gram-negative bacterial cell, which in some embodiments is E. coli. Host cells of the invention may further comprise a polynucleotide or recombinant vector encoding at least one prokaryotic polypeptide selected from the group consisting of DsbA, DsbC, DsbG and FkpA. In some embodiments, said polynucleotide or recombinant vector encodes both DsbA and DsbC. In some embodiments, an E. coli host cell is of a strain deficient in endogenous protease activities. In some embodiments, the genotype of an E. coli host cell is that of an E. coli strain that lacks degP and prc genes and harbors a mutant spr gene.

It should be noted that methods and compositions of the invention as described above also provide advantages and benefits in antibody production processes besides those indicated above. For example, methods of the invention may make it easier to refold full length antibodies found in refractiles.

BRIEF DESCRIPTION OF THE DRAWINGS

Figures 1A-C show the expression cassette sequences of plasmid paTF50 (SEQ ID NOs: 1-3).

MS
2-25-09

Figures 2A-D show the expression cassette sequences of plasmid pxTF2AP22 (SEQ ID NOs: 4-6).

Figures 3A-D show the expression cassette sequences of plasmid pxVG2AP11 (SEQ ID NOs: 7-9).

Figures 4A-D show the expression cassette sequences of plasmid pxVG11VNERK (SEQ ID NOs: 10-12).

Figures 5A-B show the 1133 base-pair ClaI-NheI fragment containing the tac promoter followed by the coding sequence for the chaperone fkpA, as described in Example 1 (SEQ ID NOs: 13-15).

Figures 6A-D show the approximately 1926 base-pair EcoRI-ApaI fragment encoding the phoA promoter, light chain, tac promoter, and the first part of heavy chain, as described in Example 1 (SEQ ID NOs: 16-18).

Figures 7A-D show the sequence of the phoA promoter, light chain, tac promoter, and heavy chain for plasmid pxTF7T3H, as described in Example 1 (SEQ ID NOs: 19-21).

Figures 8A & B show western blot analyses for the conversion of single hinge cysteines to serines for the anti-tissue factor full-length antibody as well as the anti-VEGF VNERK full-length antibody. Lanes 1 reflect products with the original wild type hinges; lanes 2 reflect products with the second hinge cysteine converted to a serine; and lanes 3 reflect products with the first hinge cysteine converted to a serine. The arrows point to the full-length antibody species heavy-heavy-light-light.

Figure 9 shows western blot analyses for the conversion of both hinge cysteines to serines for the anti-tissue factor full-length antibody as well as the anti-VEGF VNERK full-length antibody. The "cys" lanes refer to products with the original wild type hinge sequence, and the "ser" lanes refer to products with the hinge regions where both cysteines have been converted to serines. The top arrows point to the heavy-heavy-light-light species, while the lower arrows point to the half-antibody heavy-light species.

Figure 10 shows a western blot analysis for the conversion of both hinge cysteines to serines for the anti-VEGF Y0317 full-length antibody. The "cys" lane refers to products obtained with the construct with original wild type hinge, while the ser lane refers to products obtained with the construct where both hinge cysteines were converted to serines. The top arrow points to the heavy-heavy-light-light species, which is a very faint band in the "cys" lane, while the lower arrow points to the half-antibody heavy-light species.

Figure 11 shows a western blot analysis for the conversion of all four hinge cysteines of the murine Flt-IgG2b Fc fusion to serines. The "cys" lane reflects products obtained with the construct for wild type murine Fc hinge, while the "ser" lane reflects products obtained with the